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ABSTRACT

The term "web-based training" (WBT) is emerging to distinguish the use of the World Wide Web as a training and education tool from other applications. In 1996, about $100 million of the $7 billion spent on training in the United States was spent on WBT. According to estimates, the amount spent on WBT will increase more than 20-fold in 5 years. In discussions of the differences between WBT and traditional computer-based training (CBT), real-time WBT (in which instructors use the Web to extend the reach of the classroom) has been differentiated from nonreal-time WBT (which is created in a traditional CBT authoring system and simply downloaded from the Web so that students take the instruction at their leisure). It has been emphasized that, for WBT to be effective, it must be like CBT, but better. Critics of behaviorist learning do not want to see CBT replicated in WBT. The idea of using cognitive-based theories as the basis for designing WBT is emerging in the literature. Although WBT is still in its infancy, it has shown great promise. (Contains an annotated bibliography of 18 publications and addresses of 3 WBT-related websites.) (MN)

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Web-Based Training
Trends and Issues Alerts

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TRENDS AND ISSUES ALERTS
by Susan Imel 1997
ERIC Clearinghouse on Adult, Career, and Vocational Education

Web-Based Training

> *For centuries the "technology" for transferring skills and knowledge has changed little: one human being teaching another. . . . Now, [the] landscape is awash with a torrent of new technologies, creating almost limitless possibilities for heightened learning.* (Bassi, Cheney, and Van Buren 1997, pp. 46-47).

The World Wide Web (WWW), the technological phenomenon of the late 20th century, is part of this "torrent of new technologies." Although usually thought of first as a vehicle for delivering information, the Web also shows great promise as a medium for "heightening learning." Many institutions and organizations have been using the Web as a way of delivering information to support their education and training efforts, but now some are also beginning to use it as an instructional vehicle to develop skills and knowledge (Filipczak 1996; Hawkins 1997a). The term *web-based training* (WBT) is emerging to distinguish the use of the Web as a training and education tool from other applications, for example, as an information source. Although WBT is still in its infancy, interest in it is growing rapidly (Gantz 1997; Hawkins 1997a). According to Gantz (ibid.), "only about $100 million of the $7 billion that U.S. companies pay for IT [information technology] training and education was spent on Web-based training last year. But that amount will grow more than twentyfold in five years, and companies that have struggled with various training media for years may find that the Web offers a breakthrough" (p. 37). Educational institutions are also increasingly turning to the Web as an instructional tool. This *Alert* highlights some trends and issues surrounding WBT and provides a list of resources for further information.

The first set of issues are definitional and revolve around the following questions: What is WBT and how does it differ from traditional computer-based training (CBT)? Kilby (n.d.) defines WBT as computer-based training designed around Web technologies such as Web browsers and HTML that is intended for delivery across networks. Kilby acknowledges that terms such as *internet-based training*, *internet-based instruction*, *web-based instruction*, and *web-based learning* are similar to—if not synonymous with—WBT, and suggests that whatever term is used, the most important distinguishing characteristic is the emphasis on instruction and not just on information delivery.

Another way of defining WBT is offered by Fritz (1997), who distinguishes between real-time WBT, non-real-time WBT, and various combinations of the two. In real-time WBT, instructors use the Web to extend the reach of the classroom, whereas "non-real-time WBT is created in a traditional CBT authoring system and is simply downloaded from the Web to the student's hard drive where the student can take the instruction at his or her leisure" (ibid. p. 70). Fritz concludes that "to be effective WBT needs to be like CBT, but better" (ibid.).

The "need to be like CBT, but better" raises a second set of issues surrounding WBT. These issues have to do with what constitutes effective learning environments and how to create them on the Web. Because behaviorist learning theory undergirds much of CBT, critics of this approach do not want to see it replicated in WBT (O'Carroll 1997; Slay 1997).

The idea of using cognitive-based theories of learning as the basis for designing web instruction is emerging in the literature (e.g., O'Carroll 1997; Slay 1997; and Wild and Omari 1996). These theories "view learners as beings who purposefully interact with the environment—learning lies in the active construction of an internal world" (O'Carroll 1977, p. 119)—and include situated cognition, cognitive apprenticeship, contsructivism, and the social development of knowledge (Slay 1997).

Although still in its infancy, WBT shows great promise. Based on the trends and issues described here, important questions for trainers and adult educators involved with WBT include the following: does it provide an educational environment that is truly interactive for the learner and is the emphasis on the learner and not the technology?

Resources

Alexander, Shirley. "Teaching and Learning on the World Wide Web." Paper presented at ***AusWeb 95***, Ballina, NSW, Australia, July 1995. <http://www.scu.edu.au/sponsored/ausweb/ausweb95/papers/education2/alexander/>

Examines the failures of previous technologies to transform education and reviews research available to WWW developers about the way people learn and the strategies that promote the type of learning that is valued. Suggests that this knowledge can be used to inform how the WWW is used for instruction.

Bassi, Laurie J.; Cheney, Scott; and Van Buren, Mark. "Training Industry Trends 1997." ***Training and Development*** 51, no. 11 (November 1997): 46-59.

Provides a detailed report of three trends: learning technologies, outsourcing, and performance measurements.

Davies, Clare, and Houghton, David. "The Web—Hyperspace, Hypermedia, or Just Hyped?" Paper presented at the British HCI Group Symposium, ***The Missing Link: Hypermedia Usability Research and the Web***, Knowledge Media Institute, The Open University, May 1, 1996. <http://zaphod.mk.dmu.ac.uk/~cdavies/webpaper.htm>

Examines the assumptions behind viewing the Web as a hypermedia system, using as its basis what is known about Web users' problems and behavior.

Filipczak, Bob. "Training on Intranets: The Hope and the Hype." ***Training*** 33, no. 5 (September 1996): 24-32.

Reviews efforts of organizations to deliver training on their internal computer networks (i.e., intranets) and assesses the strengths and weaknesses of intranets as well as their potential for delivering training in the future.

Fritz, Mark. "Is Web-Based Training New Hype in Old Wineskins? Training Interactions." ***Emedia Professional*** 10, no. 6 (June 1997): 69-71. <http://www.onlineinc.com/emedia/JunEM/training6.html>

Compares web-based training (WBT) to computer-based training (CBT) and provides some questions designed to clarify current misconceptions about WBT.

Gantz, John. "Web-based Training Can Help IT Organizations." *Computer World* 31, no. 9 (July 1997): 37.

Reviews the advantages of web-based training, including projections for its future development and the obstacles to its implementation.

Hawkins, Donald T. "Web-Based Training for Online Retrieval: An Idea Whose Time is Coming." *Online* 21, no. 3 (May/June 1997a): 68-69.

Defines web-based training (WBT), lists its advantages, and reviews some WBT course development issues (e.g., design).

Hawkins, Donald T. "Web-Based Training for Online Retrieval: Some Examples." *Online* 21, no. 5 (September/October 1997b): 73-75.

Describes the efforts of two commercial firms and an academic library in offering web-based training designed to assist individuals retrieve online information more effectively and efficiently.

Hites, Jeanne M., and Ewing, Keith. "Designing and Implementing Instruction on the World Wide Web: A Case Study." Paper presented at the Annual Conference of the International Society for Performance and Instruction, Dallas, TX, April 1996. <http://lrs.stcloud.msus.edu/ispi/proceeding.html>

This case study describes some tips and lessons learned from a project at St. Cloud State University designed to teach information literacy over the WWW. Both the advantages and disadvantages of the Web as an instructional environment and the politics of web-based course development in an academic environment are reviewed.

Huang, Albert H. "Online Training: A New Form of Computer-Based Training." *Journal of Education for Business* 72, no. 7 (September-October 1997): 35-38.

Reviews the development of online training (OLT), training that uses computer networks as the primary channel to conduct training activities, by comparing it to computer-based training. Includes the advantages, challenges for trainers and learners, and types of OLT systems.

Kilby, Tim. *Web-Based Training Information Center*. <http://www.webbasedtraining.com>

The web-based training (WBT) information center contains a number of resources related to WBT, including "Going Online for Training" (http://www.filename.com/online/sld001.htm) a WBT primer; the "WBT Information Center 1996 Training Survey" (http://www.filename.com/wbt/_private/survey_1996.htm) that provides the results of a survey on organizational training capabilities, current implementations, plans, and attitudes related to WBT; "Frequently Asked Questions" (http://www.filename.com/wbt/_private/faq.htm) that provide basic, helpful information about WBT; and "WBT Advantages and Disadvantages" (http://www.filename.com/wbt/_private/advdis.htm).

O'Carroll, Peter. "Learning Materials on the World Wide Web: Text Organization and Theories of Learning." *Australian Journal of Adult and Continuing Education* 37, no. 2 (July 1997): 119-123.

Discusses certain design aspects of WWW instructional documents in the context of a constructivist approach to pedagogy, particularly in relation to the structures employed and the organization of the text.

Oliver, Ron; Herrington, Jan; and Omari, Arshad. "Creating Effective Instructional Materials for the World Wide Web." Paper presented at *AusWeb 96: The Second Australia WorldWideWeb Conference*, Gold Coast, Queensland, Australia, July 1996. <http://www.scu.edu.au/sponsored/ausweb/ausweb96/educn/oliver/>

Considers design aspects that can help to improve the instructional effectiveness of teaching and learning through the WWW. Included are planning and development of the instructional materials, the learners, and how the materials will be implemented.

Schaaf, Dick. "A Pipeline Full of Promises: Distance Training Is Ready to Deliver." *Training* 34, no. 10 (October 1997): A6-A24.

This special section on distance training is a primer that introduces readers to a host of websites, reviews the advantages of distance training, lists lessons learned regarding web-based training, and provides a glossary of distance training terms.

Slay, Jill. "The Use of the Internet in Creating an Effective Learning Environment." Paper presented at *AusWeb 97: The Third Australian World Wide Web Conference*, Gold Coast, Queensland, Australia, July 5-9, 1997. <http://ausweb.scu.edu.au/proceedings/slay/paper.html>

Evaluates the use of the Internet in providing an effective learning environment against criteria contained within the qualities desired for University of South Australia's graduates rather than narrower, behaviorist ones based on Skinner.

Webb, Greg. "A Theoretical Framework for Internet-Based Training at Sydney Institute of Technology." Paper presented at *AusWeb 97: The Third Australian World Wide Web Conference*, Gold Coast, Queensland, Australia, July 5-9, 1997. <http://ausweb.scu.edu.au/proceedings/webb/paper.html>

Examines what it means to use the Internet as a substitute for the classroom without sacrificing all the advantages of face-to-face teaching. The role of educational administration is also included.

Wild, Martyn, and Omari, Arshad. "Developing Educational Content for the Web: Issues & Ideas." Paper presented at *AusWeb 96: The Second Australian World Wide Web Conference*. Gold Coast, Queensland, Australia, July 1996. <http://www.scu.edu.au/sponsored/ausweb/ausweb96/educn/wild/paper.html>

Proposes strategies for designing effective learning environments for the Web that are undergirded by conversation frameworks and constructivist theory.

Wulf, Katie. "Training via the Internet: Where Are We?" *Training and Development* 50, no. 5 (May 1996): 50-55.

Reviews training delivery methods using the Internet (e.g., e-mail, downloading), internal training networks, and assesses the advantages and disadvantages of using the Internet for training. Includes information on web-based training developers, examples of Internet courses, and examples of sponsors of Internet-based training, including URLs.

Websites

WBT Information Center at www.webasedtraining.com

The Masie Center, The Technology and Learning ThinkTank at www.masie.com

World Wide Web Courseware Development Home Page at www.unb.ca/web/wwwdev/

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